

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. - 17. (Canceled)

18. (Currently amended) A polymeric ~~composition~~ fiber comprising a condensation polymer, other than a copolymer formed from a cyclic lactam and a C<sub>6-10</sub> diamine monomer or a C<sub>6-10</sub> diacid monomer, and a resinous additive comprising an oligomer having a molecular weight of about 500 to 3000 and an aromatic character wherein the additive miscible in the condensation polymer; the fiber having a diameter of 0.01 to 5 microns, the fibers after exposure to air at 140°F and 100% humidity for 1 to 6 hours, at least 50% of the fiber remains substantially unchanged.

19. (Currently amended) The ~~polymeric composition~~ fiber of claim 18 wherein the polymer is a component of a solution, the solution comprising a major proportion of an aqueous alcoholic solvent and about 3 to 30 wt% of the polymeric composition.

20. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a polyalkylene terephthalate.

21. (Currently amended) The ~~composition~~ fiber of claim 20 wherein the condensation polymer comprises a polyalkylene naphthalate.

22. (Currently amended) The ~~composition~~ fiber of claim 20 wherein the condensation polymer comprises a polyethylene terephthalate.

23. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a nylon polymer comprising a homopolymer having repeating units derived from a cyclic lactam.

24. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the nylon copolymer is combined with a second nylon polymer, the second nylon polymer differing in molecular weight or monomer composition.

25. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the nylon copolymer is combined with a second nylon polymer, the second nylon polymer comprising an alkoxy alkyl modified polyamide.

26. (Currently amended) The ~~composition~~ fiber of claim 24 wherein the second nylon polymer comprises a nylon copolymer.

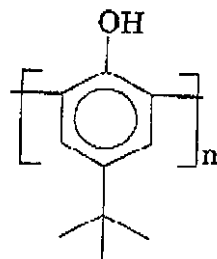
27. (Currently amended) The ~~composition~~ fiber of claim 24 wherein the polymers are treated to form a single polymeric composition as measured by a differential scanning calorimeter showing a single phase material.

28. (Currently amended) The ~~composition~~ fiber of claim 27 wherein the copolymer and the second polymer are heat treated.

29. (Currently amended) The ~~composition~~ fiber of claim 28 wherein the copolymer and the second polymer are heat treated to a temperature less than the lower melting point of the polymers.

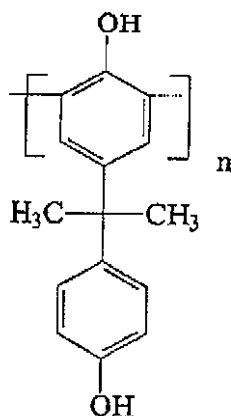
30. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the additive comprises an oligomer comprising tertiary butyl phenol.

31. (Currently amended) The ~~composition~~ fiber of claim 30 wherein the additive comprises an oligomer comprising:



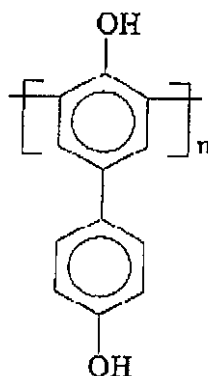
32. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the resin comprises an oligomer comprising bis-phenol A.

33. (Currently amended) The ~~composition~~ fiber of claim 32 wherein the additive comprises an oligomer comprising:



34. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the resin comprises an oligomer comprising dihydroxy biphenyl.

35. (Currently amended) The ~~composition~~ fiber of claim 34 wherein the additive comprises an oligomer comprising:



36. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the additive comprises a blend of the resinous additive and a fluoropolymer.

37. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the additive comprises a fluorocarbon surfactant.

38. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the additive comprises a nonionic surfactant.

39. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a polyurethane polymer.

40. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a blend of a polyurethane polymer and a polyamide polymer.

41. (Currently amended) The ~~composition~~ fiber of claim 40 wherein the polyamide polymer comprises a nylon.

42. (Currently amended) The ~~composition~~ fiber of claim 41 wherein the nylon comprises a nylon homopolymer, a nylon copolymer or mixtures thereof.

43. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises an aromatic polyamide.

44. (Currently amended) The ~~composition~~ fiber of ~~claim 18~~ claim 43 wherein the condensation polymer comprises a reaction product of a diamine monomer and poly(m-phenylene isophthalamide).

45. (Currently amended) The ~~composition~~ fiber of claim 40 wherein the polyamide comprises a reaction product of a diamine and a poly(p-phenylene terephthalamide).

46. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a polybenzimidazole.

47. (Currently amended) The ~~composition~~ fiber of claim 18 wherein the condensation polymer comprises a polyarylate.

48. (Currently amended) The ~~composition~~ fiber of claim 47 wherein the polyarylate polymer comprises a condensation polymerization reaction product between bis-phenol-A and mixed phthalic acids.

49. (Currently amended) ~~A polymeric composition~~ The fiber of claim 18 comprising the reaction product of an aldehyde reactant and a blend of nylon 4,6 and nylon 6,6.

50. (Currently amended) ~~A polymeric composition~~ The fiber of claim 18 comprising the reaction product of an aldehyde reactant and a nylon 4,6.

51. (Currently amended) ~~A polymeric composition~~ The fiber of claim 18 comprising the reaction product of an aldehyde and a nylon 4,6 in the presence of a C<sub>1-24</sub> alcohol and water.

52. (Currently amended) ~~A composition of~~ The fiber of claim 51 wherein the alcohol comprises a solvent selected from the group consisting of methanol, ethanol, isopropanol, stearic alcohol or mixtures thereof.

53. (Currently amended) ~~The composition~~ fiber of claim 52 wherein the aldehyde reactant comprises formaldehyde.

54. (Currently amended) ~~The composition~~ fiber of claim 52 wherein the aldehyde reactant comprises acetaldehyde.

55. (Currently amended) ~~The reaction-product~~ fiber of claim 49 additionally comprising a resinous additive comprising an oligomer having a molecular weight of about 500 to 3000 and an aromatic character wherein the additive is miscible in the condensation polymer.

56. (Currently amended) ~~The composition~~ fiber of claim 49 wherein the reaction product is blended with a nylon copolymer.

57. (Currently amended) ~~The composition~~ fiber of claim 56 wherein the nylon copolymer comprises repeating units derived from a cyclic lactam, a C<sub>6-10</sub> diamine monomer and a C<sub>6-10</sub> diacid monomer.

58. (Currently amended) A fine fiber composition comprising an addition polymer and about 2 to 25 wt.% of an additive, the additive comprising a resinous material having a molecular weight of about 500 to 3000 and an aromatic character, wherein the additive is miscible in the polymer; the fiber having a diameter of 0.01 to 5 microns, the fibers after exposure to air at 140°F and 100% humidity for 1 to 6 hours, at least 50% of the fiber remains substantially unchanged.

59. (Original) The fine fiber of claim 58 wherein the additive comprises a hydrophobic coating on the fine fiber surface.

60. (Original) The fine fiber of claim 59 wherein the hydrophobic coating comprises an oleophobic coating.

61. (Original) The fine fiber of claim 60 wherein the hydrophobic and oleophobic coating is formed on a fiber having a hydrophilic composition.

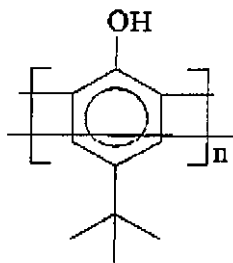
62. (Original) The fine fiber of claim 58 wherein the coating has a thickness of less than 100 Å.

63. (Original) The fine fiber of claim 58 wherein the coating has a thickness of less than about 80 Å.

64. (Original) The fine fiber of claim 58 wherein the coating has a thickness of less than 50 Å.

65. (Original) The fine fiber of claim 58 wherein the additive comprises an oligomer comprising tertiary butyl phenol.

66. (Currently amended) The fine fiber of claim 65 wherein ~~the additive comprises an oligomer comprising~~:



the addition polymer is crosslinked with a crosslinking agent.

67. (Original) The fine fiber of claim 58 wherein the resin comprises bis-phenol A.

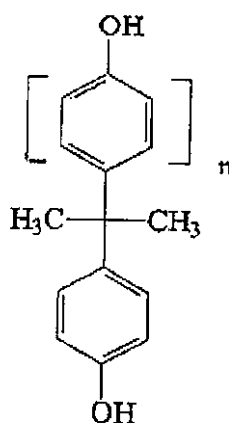
68. (Currently amended) The fine fiber of ~~claim 67~~ claim 66 wherein the crosslinking agent comprises a polymer comprising repeating units of acrylic acid, the polymer having a molecular weight of about 1000 to 5000.

69. (Currently amended) The fine fiber of claim 68 wherein the crosslinking agent polymer comprises an acrylic acid copolymer having a molecular weight of 1000 to 5000.

70. (Currently amended) The fine fiber of ~~claim 66~~ claim 66 wherein the crosslinking agent comprises a melamine formaldehyde resin.

71. (Original) The fine fiber of ~~claim 67~~ claim 66 wherein the crosslinking agent comprises an aldehyde crosslinking agent substantially free of formaldehyde.

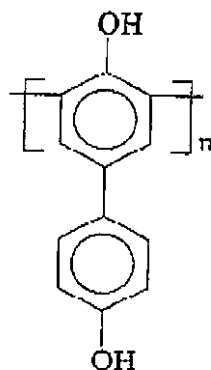
72. (Original) The fine fiber of claim 67 wherein the additive comprises an oligomer comprising:



73. (Original) The composition of claim 65 wherein the resin comprises an oligomer comprising dihydroxy biphenyl.



74. (Original) The composition of claim 73 wherein the additive comprises an oligomer comprising:



75. (Original) The fine fiber of claim 58 wherein the diameter of the fiber is about 0.1 to about 2 micron.

76. (Original) The fine fiber of claim 58 wherein the diameter of the fiber is about 0.1 to about 0.5 micron.

77. (Original) The fine fiber of claim 58 wherein the diameter of the fiber is about 0.05 to about 0.2 micron.

78. (Original) The fine fiber of claim 58 comprising a crosslinked polyvinylalcohol, the fiber having a diameter of about 0.01 to 2 microns.

79. (Original) The fine fiber of claim 78 wherein the crosslinking agent is present in an amount of about 5 to 50 wt% based on the polyvinylalcohol polymer.

80. (Currently amended) A fine fiber composition comprising a condensation polymer, other than a copolymer of a cyclic lactam and a C<sub>6-10</sub> diamine monomer or a C<sub>6-10</sub> diacid monomer, and an additive composition having a molecular weight of about 500 to 3000; the fiber having a diameter of 0.01 to 5 microns, the fibers after exposure to air at 140°F and 100% humidity for 1 to 6 hours, at least 50% of the fiber remains substantially unchanged.

81. (Original) The fine fiber of claim 80 wherein the additive comprises a hydrophobic coating on the fine fiber surface.

82. (Original) The fine fiber of claim 81 wherein the hydrophobic coating comprises an oleophobic coating.

83. (Original) The fine fiber of claim 82 wherein the hydrophobic and oleophobic coating is formed on a fiber having a hydrophilic composition.

84. (Original) The fine fiber of claim 81 wherein the coating has a thickness of less than about 100 Å.

85. (Original) The fine fiber of claim 81 wherein the coating has a thickness of less than about 80 Å.

86. (Original) The fine fiber of claim 81 wherein the coating has a thickness of less than 50 Å.

87. (Original) The fine fiber of claim 81 wherein the condensation polymer comprises a polyalkylene terephthalate.

88. (Original) The fine fiber of claim 87 wherein the condensation polymer comprises a polyalkylene naphthalate.

89. (Original) The fine fiber of claim 87 wherein the condensation polymer comprises a polyethylene terephthalate.

90. (Original) The fine fiber of claim 81 wherein the condensation polymer comprises a nylon polymer comprising a homopolymer having repeating units derived from a cyclic lactam.

91. (Original) The fine fiber of claim 90 wherein the nylon copolymer is combined with a second nylon polymer, the polymer differing in molecular weight or monomer composition.

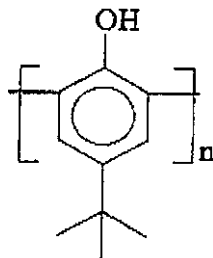
92. (Original) The fine fiber of claim 91 wherein the second nylon polymer comprises a nylon copolymer.

93. (Original) The fine fiber of claim 91 wherein the polymers are treated to form a single polymeric composition as measured by a differential scanning calorimeter showing a single phase material.

94. (Original) The fine fiber of claim 93 wherein the copolymer and the second polymer are heat treated.

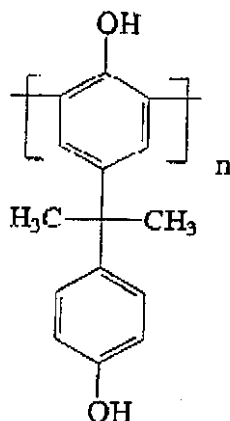
95. (Original) The fine fiber of claim 80 wherein the additive comprises an oligomer comprising tertiary butyl phenol linked.

96. (Original) The fine fiber of claim 95 wherein the additive comprises:



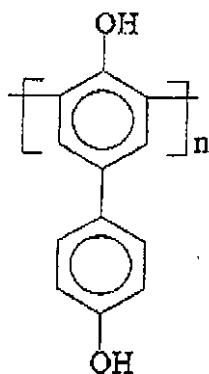
97. (Original) The fine fiber of claim 80 wherein the resin comprises bis-phenol A.

98. (Original) The fine fiber of claim 97 wherein the additive comprises:



99. (Original) The fine fiber of claim 80 wherein the resin comprises an oligomer comprising dihydroxy biphenyl.

100. (Original) The fine fiber of claim 99 wherein the additive comprises an oligomer comprising:



101. (Original) The fine fiber of claim 80 wherein the diameter of the fiber is about 0.1 to about 0.5 micron.

102. (Original) The fine fiber of claim 80 wherein the diameter of the fiber is about 1 to about 0.01 micron diameter.

103. (Original) The fine fiber composition of claim 80 wherein the fiber diameter is about 0.2 to 0.1 micron.

104. (Original) The fine fiber comprising a fiber having a diameter of about 0.1 to 0.5 micron, the fine fiber comprising the reaction product of an aldehyde reactant and a blend of a nylon 4,6 and a nylon 6,6.

105. (Original) The fine fiber of claim 104 wherein the fine fiber comprises the reaction product of an aldehyde reactant and a blend of a nylon 6 and a nylon 6,6 in the presence of a C<sub>1-24</sub> alcohol and water.

106. (Original) The fine fiber of claim 104 wherein the fine fiber comprises the reaction product of an aldehyde reactant and a nylon 4,6.

107. (Original) The fine fiber of claim 106 wherein the reaction product of an aldehyde and a nylon 4,6 is conducted in the presence of alcohol and water.

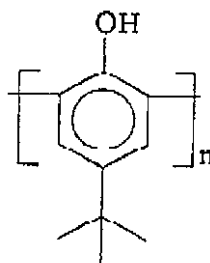
108. (Original) The fine fiber of claim 104 wherein the fine fiber additionally comprises a copolymer of a cyclic lactam, a C<sub>6-10</sub> diamine monomer and a C<sub>6-10</sub> diacid monomer.

109. (Original) The fine fiber of claim 104 wherein the fine fiber additionally comprises a resinous additive comprising an oligomer having a molecular weight of about 500 to 3000 and an aromatic character wherein the additive is miscible in the condensation polymer.

110. (Original) A polymeric composition comprising the polymeric reaction product of a nylon 6 and a nylon copolymer comprising a cyclic lactam, a C<sub>6-10</sub> diamine monomer and a C<sub>6-10</sub> diacid monomer and a resinous additive comprising an oligomer having a molecular weight of about 500 to 3000 and an aromatic character wherein the additive is miscible in the condensation polymer.

111. (Currently amended) ~~A polymer~~ The composition of claim 110 wherein the polymeric reaction product comprises nylon 6,6 and the nylon copolymer.

112. (Original) The composition of claim 110 wherein the additive comprises an oligomer comprising:



113. - 179. (Canceled)

180. (Currently amended) The fine fiber of ~~claim 67~~ claim 66 wherein the crosslinking agent comprises a homopolymer comprising repeating units of acrylic acid, the polymer having a molecular weight of about 1000 to 5000 and an acidic catalyst.

181. (Original) The fine fiber of claim 180 wherein the coating has a thickness of less than about 30 Å.

182. (Original) The fine fiber of claim 180 wherein the coating has a thickness of less than about 10 Å.

183. (Currently amended) The composition of claim 91 wherein the ~~nylon copolymer is combined with a second nylon polymer, the second nylon polymer comprising~~ comprises an alkoxy alkyl modified polyamide.

184. (Original) A fine fiber composition comprising a polymer comprising polyvinyl alcohol and a crosslinking agent.

185. (Original) The fine fiber of claim 184 wherein the polyvinylalcohol is crosslinked with about 1 to 40 wt.% of the crosslinking agent.

186. (Original) The fine fiber of claim 185 wherein the crosslinking agent comprises a polymer comprising repeating units of acrylic acid, the polymer having a molecular weight of about 1000 to 5000.

187. (Original) The fine fiber of claim 185 wherein the polymer comprises an acrylic acid copolymer having a molecular weight of 1000 to 5000 .

188. (Original) The fine fiber of claim 185 wherein the polymer comprises an acrylic acid homopolymer having a molecular weight of 1000 to 5000 .

189. (Original) The composition of claim 185 wherein the crosslinked polyvinylalcohol is crosslinked using a melamine-formaldehyde resin having a molecular weight of about 1000 to 3000.

190. (New) A fine fiber comprising a polyvinyl alcohol having a fiber size of about 0.01 to 0.5 micron.

191. (New) The fiber of claim 190 wherein the fine fiber comprises a blend of two polyvinyl alcohol polymers and has a diameter of 0.01 to 0.5 micron.

192. (New) The fiber of claim 190 wherein the fine fiber has a diameter of 0.01 to 0.2 micron.

193. (New) The fiber of claim 190 wherein the fiber, when exposed to an air stream having a temperature of about 140°F and a relative humidity of about 100%, greater than about 50% of the fiber survives for more than 1-16 hours.

194. (New) The fiber of claim 190 wherein the polyvinyl alcohol is partially hydrolyzed.

195. (New) The fiber of claim 190 wherein the polyvinyl alcohol is fully hydrolyzed.

196. (New) The fiber of claim 195 wherein the fine fiber comprises a crosslinked polyvinyl alcohol.

197. (New) The fiber of claim 196 wherein the crosslinking agent comprises urea formaldehyde, melamine formaldehyde, phenol formaldehyde, or mixtures thereof.

198. (New) The fine fiber of claim 197 wherein the crosslinking agent comprises a dialdehyde, trialdehyde, tetraaldehyde, a diacid, a urethane reactant, epoxy reactant, or mixtures thereof.

199. (New) The fine fiber of claim 190 comprising a layer having a thickness of less than about 30 microns.

200. (New) The fine fiber of claim 190 comprising a layer having a thickness of less than about 20 microns.

201. (New) A fine fiber comprising a polymer selected from the group consisting of:  
(a) a nylon 66, the fine fiber having a fiber size of about 0.01 to 0.5 micron;



(b) a blend of a hydrophobic additive and a polymer comprising a blend of at least two different nylon polymers, the fine fiber having a fiber size of about 0.01 to 0.5 micron;

(c) a blend of a hydrophobic additive and a nylon polymer comprising a nylon other than a copolymer formed from a cyclic lactam and a C<sub>6-10</sub> diamine monomer or a C<sub>6-10</sub> diacid monomer, the fine fiber having a fiber size of about 0.01 to 0.5 micron; or

(d) mixtures thereof; wherein after exposure to air at 140°F and 100% relative humidity for 1 to 16 hours at least 50% of the fine fiber remains substantially unchanged.

202. (New) The media of claim 201 wherein the fine fiber comprises a blend of two nylon polymers and has a diameter of 0.01 to 0.2 micron.

203. (New) The media of claim 201 wherein the fine fiber survives immersion in hot water at 140°F and at least 50% of the fiber survives after 5 minutes.

204. (New) The media of claim 201 wherein the fiber, when exposed to an air stream having a temperature of about 140°F and a relative humidity of about 100%, greater than about 50% of the fiber survives for more than 16 hours.

205. (New) The fine fiber of claim 201 comprising a layer having a thickness of less than about 30 microns.

206. (New) The fine fiber of claim 201 comprising a layer having a thickness of less than about 20 microns.

207. (New) A fine fiber comprising a polymer selected from the group consisting of:

(a) an acrylic polymer having a fiber size of about 0.01 to 0.5 micron;

(b) a blend of a hydrophobic additive and a polymer comprising a blend of at least two different acrylic polymers, the fine fiber having a fiber size of about 0.01 to 0.5 micron; and

(c) mixtures thereof; the substrate comprising a filtration media wherein after exposure to air at 140°F and 100% relative humidity for 1 to 16 hours at least 50% of the fine fiber remains substantially unchanged.

208. (New) The media of claim 207 wherein the fine fiber can be exposed to an alcoholic solvent at 70°F and wherein at least 50% of the fiber remains after 5 minutes.

209. (New) The media of claim 207 wherein the fine fiber survives immersion in hot water at 140°F and at least 50% of the fiber survives after 5 minutes.

210. (New) The media of claim 207 wherein the fiber, when exposed to an air stream having a temperature of about 140°F and a relative humidity of about 100%, greater than about 50% of the fiber survives for more than 16 hours.

211. (New) The media of claim 207 wherein a temperature of 160°F is used.

212. (New) The fine fiber of claim 207 comprising a layer having a thickness of less than about 30 microns.

213. (New) The fine fiber of claim 207 comprising a layer having a thickness of less than about 20 microns.

214. (New) The media of claim 207 wherein the fine fiber comprises a microfiber having a diameter of about 0.1 to 0.5 micron.

215. (New) The media of claim 207 wherein the fine fiber comprises a nanofiber having a diameter of about 0.01 to 0.2 micron.

216. (New) A fine fiber comprising the reaction product of a polymer resin and a cross linking agent, the fiber having a fiber size of about 0.01 to 0.5 micron, the substrate comprising a filtration media; wherein after exposure to air at 140°F and 100% relative humidity for 1 to 16 hours at least 50% of the fine fiber remains substantially unchanged.

217. (New) The media of claim 216 wherein the fine fiber comprises a blend of two polymer resins and has a diameter of 0.01 to 0.2 micron.

218. (New) The media of claim 216 wherein the media, when exposed to an air stream having a temperature of about 140°F and a relative humidity of about 100%, greater than about 50% of the fiber survives for more than 16 hours.

219. (New) The filter media of claim 216 wherein the crosslinking agent comprises urea formaldehyde, melamine formaldehyde, phenol formaldehyde, or mixtures thereof.

220. (New) The fine fiber of claim 216 wherein the crosslinking agent comprises a dialdehyde, trialdehyde, tetraaldehyde, a diacid, a urethane reactant, epoxy reactant, or mixtures thereof.

221. (New) The fine fiber of claim 216 comprising a layer having a thickness of less than about 30 microns.

222. (New) The fine fiber of claim 216 comprising a layer having a thickness of less than about 20 microns.

223. (New) A fine fiber comprising an electrospun fiber comprising the reaction product of a polymer resin and a crosslinking agent, the substrate comprising a filtration media; wherein after exposure to air at 140°F and 100% relative humidity for 1 to 16 hours at least 50% of the fine fiber remains substantially unchanged.

224. (New) The fiber of claim 223 wherein the fine fiber comprises a blend of two polymer resins and has a diameter of 0.01 to 0.5 micron.

225. (New) The fiber of claim 223 wherein the fine fiber has a diameter of 0.01 to 0.2 micron.

226. (New) The fiber of claim 223 wherein the media, when exposed to an air stream having a temperature of about 140°F and a relative humidity of about 100%, greater than about 50% of the fiber survives for more than 16 hours.

227. (New) The fiber of claim 223 wherein the substrate comprises a woven or non-woven substrate.

228. (New) The fiber of claim 227 wherein the non-woven substrate comprises a fiber selected from cellulose, glass, polymer, metal, and combinations thereof.

229. (New) The fiber of claim 223 wherein the substrate comprises spun bonded polymeric non-woven fabric.

230. (New) The fiber of claim 223 wherein the substrate comprises a non-woven polymeric fabric.

231. (New) The fiber of claim 223 wherein the crosslinking agent comprises urea formaldehyde, melamine formaldehyde, phenol formaldehyde, or mixtures thereof.

232. (New) The fiber of claim 223 wherein the crosslinking agent comprises a dialdehyde, trialdehyde, tetraaldehyde, a diacid, a urethane reactant, epoxy reactant, or mixtures thereof.

233. (New) The fine fiber of claim 223 comprising a layer having a thickness of less than about 30 microns.

234. (New) The fine fiber of claim 223 comprising a layer having a thickness of less than about 20 microns.